

## **ABSTRACT**

A microwave heating system is provided which uses a heat conductive medium. The heat conductive medium is heated in a heater. The heater includes a shell which forms an enclosure. The enclosure has an upper end and a lower end. A heating coil is  
5 located in the enclosure. The heating coil has an upper end and a lower end and has an inverted frusto-conical shape. The upper end of the heating coil is larger than the lower end. Three magnetrons are mounted adjacent the heating coil. One magnetron is located at the upper end of the heating coil and the other two magnetrons are located on opposite sides of the heating coil for directing microwave energy into the  
10 heating coil. An electrical distribution system is connected to the magnetron. A return line supplies the heat conductive medium into the heating coil adjacent the lower end of the shell. The heat conductive medium is fed through a feed line to a storage tank and into a two-stage domestic hot water heater. The heat conductive medium then flows back to the hater through the return line. A circulator is located in the return  
15 line.